

ABSTRACT OF THE DISCLOSURE

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In preferred aspects the present invention provides: (i) a method of and apparatus for depositing material, preferably a film, on a substrate, the method comprising the steps of: providing a substrate; heating the substrate; generating an aerosol comprising droplets of a material solution; providing a nozzle unit for delivering the aerosol to the substrate, the nozzle unit including at least one outlet through which a directed flow of the aerosol is delivered and at least one electrode; charging the aerosol droplets with a positive or negative charge; providing a flow of the aerosol through the nozzle unit so as to deliver a directed flow of the aerosol from the at least one outlet; and generating an electric field between the substrate and the at least one electrode such that the directed aerosol flow is attracted towards the substrate; and (ii) a method of and apparatus for fabricating a powder, preferably an ultrafine powder, the method comprising the steps of: providing a heated zone; generating an aerosol comprising droplets of a material solution; providing a nozzle unit for delivering the aerosol to the heated zone, the nozzle unit including at least one outlet through which a directed flow of the aerosol is delivered and at least one electrode; charging the aerosol droplets with a positive or negative charge; providing a flow of the aerosol through the nozzle unit so as to deliver a directed flow of the aerosol from the at least one outlet; and generating an electric field between the heated zone and the at least one electrode such that the directed aerosol flow is attracted towards the heated zone where the aerosol droplets react homogeneously in the gas phase to form a powder.